

SAN ANTONIO PREFRESHMAN ENGINEERING PROGRAM & USDA

**2006-38422-17090
\$198,000**

Raul (Rudy) A. Reyna, Ph.D. - Director



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9/5/2006



AGENDA

- **Prefreshman Engineering Program**
- **Organizations Involved**
- **Relevant Priorities**
- **Objectives**
- **Activities**
- **Beneficiaries**
- **Evaluation and Expected Impact**

Founded by Dr. Manuel Berriozábal in 1979



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ACADEMIC PROGRAM

- Eight-week summer program
- Three year curriculum
- Texas Education Agency credit
- Scholarships



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CORE CURRICULUM

Year 1

Logic and Its Applications to Mathematics
Introduction to Engineering
Introduction to Computer Science

Year 2

Algebraic Structures
Introduction to Physics

Year 3

Introduction to Probability and Statistics
Introduction to Technical Writing

Every Year

Career Speakers, Problem Solving, and
Research/Projects



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Institutions and Agencies/ Organizations Involved

- University of Texas at San Antonio
- UTSA Center for Water Research
- UTSA College of Education
- SAWS/ CRA/ Aquarena Springs
- Alamo Community College District
- OLLU/ STM/ UIW
- 150 Local Schools

USDA Collaborator
National Resources Conservation Service



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CSREES/USDA Relevant Priorities

CSREES's Strategic Objective 5.2

- Educational Need Area (f)
 - Underrepresented student recruitment/retention
 - Mentoring
- Educational Need Areas (c) and (e)
 - *Systems Dynamics*
 - Experiential Learning
- Educational Need Area (a)
 - New Educational Models on Teaching and Learning
- Educational Need Area (b)
 - Faculty Preparation



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Objectives

- Prepare Students for Science and Engineering Careers
- Support 22 Program Assistants/Mentors (college students)
 - Help with Tutoring & Homework / Role Models
 - Impact 550 Students
- Serve 1,350+ Students
- Expose Students to Water Science
 - 85% of students increase knowledge of Water Science
- Expose students to Systems Dynamics Tools
 - Problem Solving and Experiential Learning
- Utilize Learner-Centered Learning



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Activities

- 7 Week Summer Program
- STEM Based Curriculum
- Career Speakers
- Projects/Research
- Field Trips
 - San Antonio Water System
 - Colorado River Authority
 - Aquarena Springs
- Lunch



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Beneficiaries

- 1350+ Students
- Teachers (50)
- College Students/ Mentors (80)
- USDA and Other Industries
 - Internships
- Nation



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Evaluation

- Track Students
 - College / University Completion
 - Graduate School
 - Employment in STEM
- Water Science Pre-Post Tests

Expected Impact

- 2700 Students Over 2 Summers

PREPUSDA.Site



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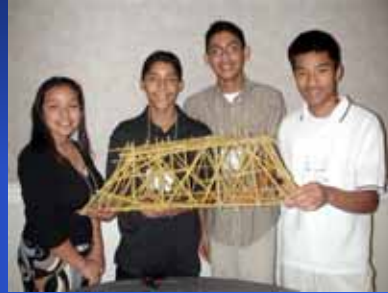
CORE CURRICULUM (CONT.)

All Years

Topics in Problem Solving
Career Awareness Seminars
Field Trips

Year 4

Sites in San Antonio, Houston,
Laredo, and Lubbock offer a 4th
year curriculum



Student's projects are displayed at the Houston
PREP Annual Engineering and NASA Days



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PREP-USA SITES



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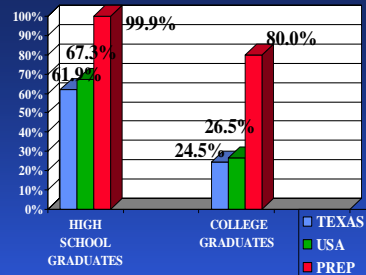
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PREP RESULTS

Follow-up survey from 2004 indicates:

- 99.9% graduate from high school
- 96% are college students or senior college graduates.
- 90% of the college attendees are college graduates
- 78% of the college grads are members of minority groups
- 50% of the college graduates are science, mathematics, or engineering majors
- 74% of the science, mathematics, and engineering graduates are members of minority groups



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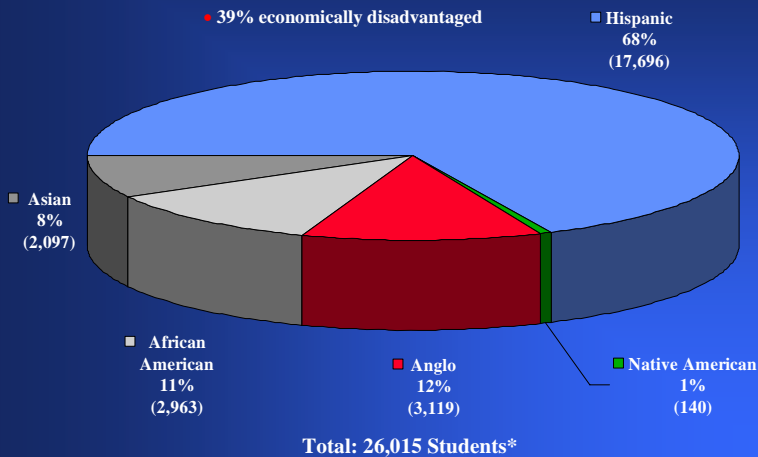
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PREP STATISTICS

Overall Minority and Gender Results (1979-2004):

- 80% under-represented minorities
- 54% women
- 39% economically disadvantaged



*Number of students who have completed at least one year of PREP



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